

Abstract of the Disclosure

The present invention resides in an optical fiber able to form an optical transmitting line for wavelength division multiplexing transmission in a wavelength band of $1.5\ \mu\text{m}$ using a Raman amplifier, and an optical communication system using this optical fiber. The optical fiber has an effective core area from $40\ \mu\text{m}^2$ to $60\ \mu\text{m}^2$ in a set wavelength band of at least one portion of a wavelength band of $1.5\ \mu\text{m}$; a dispersion value from 4 to 10 ps/nm/km at a wavelength of $1.55\ \mu\text{m}$; a dispersion slope set to a positive value equal to or smaller than 0.04 ps/nm²/km in a wavelength band of $1.55\ \mu\text{m}$; and a zero dispersion wavelength equal to or smaller than $1.4\ \mu\text{m}$. Further, a cutoff wavelength is set to be equal to or smaller than $1.5\ \mu\text{m}$ at a length of 2 m, and a bending loss is set to be equal to or smaller than 5 dB/m at a diameter of 20 mm in the wavelength band of $1.5\ \mu\text{m}$. In a refractive index profile of the optical fiber, for example, a relative refractive index difference $\Delta 1$ of a first glass layer as an innermost layer with respect to a reference layer, and a relative refractive index difference $\Delta 3$ of the refractive index of a third glass layer as a third layer from an inner side with respect to the reference layer are set to be positive. Further, a relative refractive index difference $\Delta 2$ of a second glass layer as a second layer from the inner side with respect to the reference layer is set to be negative.